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ABSTRACT

This Brief first summarizes research findings regarding computer-assisted instruction (CAI) and its effectiveness in adult literacy education programs. The following findings are given: CAI is effective for a significant number of adult learners; CAI is effective because it provides the adult learner with flexibility, control, individualization, privacy, and immediate feedback; CAI effectiveness depends to a great extent upon the instructional staff; undereducated adults have positive attitudes toward computers and are interested in using them in their educational programs; and CAI effectiveness is limited by the shortage of appropriate software. The Brief then provides guidelines for effective use of CAI in adult literacy instruction. They include familiarizing all instructional staff with the CAI aspects of the literacy program; providing sufficient demonstration time and enough individual personal assistance for students to feel comfortable using computers; providing training and inservice opportunities for instructional staff; using only software appropriate for adult learners; not thinking of the computer only as a tool for individual use; providing for flexible scheduling of microcomputer use; not depending on the computer to be the sole source of instructional support; and providing opportunities for students to develop occupational skills through CAI. Thirteen references are listed. (YLB)

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ERIC Clearinghouse on Adult, Career, and Vocational Education

Practice Application Brief

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COMPUTER-ASSISTED INSTRUCTION IN ADULT LITERACY EDUCATION

As microcomputers have become more widely available, it has been much more feasible to use computer-assisted instruction (CAI) to increase adults' literacy levels. Computer technology provides alternatives to conventional instructional strategies, and it also helps "bridge the gap between literacy and nonliteracy . . . [by assisting] nonliterate persons [to] manage print as a communication medium" (Nickerson 1985, p. 336) and by equipping them with the ability to use one of the primary tools of an information society. Following a summary of research-based findings on CAI, this Brief provides guidelines for effective use of CAI in adult literacy instruction.

Research Findings Related to Computer-assisted Instruction

What does the research say about computer-assisted instruction and its effectiveness in adult literacy education programs? The following findings have been derived from the research (Askov, Maclay, and Meenan 1987; "Attitudes toward Computers" 1988; Imel 1983; Kulik, Kulik, and Shwalb 1986; Lewis 1988; Patton 1987; Rachal 1984; Turner 1988; and Wangberg, Meisner, and Busick 1985):

- **CAI is effective for a significant number of adult learners.** Results of numerous research studies revealed that individuals in adult literacy programs increase their test scores and/or grade-level equivalency through the use of CAI. Although not all researchers claim that their results are statistically significant, most report gains in achievement with CAI.

- **CAI is effective because it provides the adult learner with flexibility, control, individualization, privacy, and immediate feedback.** Researchers most often attributed the success of CAI to its capacity to--

  1. provide flexibility in instructional delivery freeing students from constraints associated with time and place and enabling them to progress without having to wait for assistance from an instructor;
  2. enable students to take charge of their own learning, increasing their sense of empowerment and self-directedness;
  3. individualize instruction, allowing students to concentrate on areas of greatest need and to work at their own pace;
  4. ensure privacy by permitting students to make and correct mistakes on their own; and
  5. provide immediate feedback resulting in positive reinforcement and increased motivation.

- **CAI effectiveness depends to a great extent upon the instructional staff.** In literacy instruction, CAI should supplement rather than replace instructors or tutors. Research reveals that the effectiveness of CAI depends upon instructors' commitment to it as an instructional medium as well as their expertise in using it.

- **Undereducated adults generally have positive attitudes toward computers and are interested in using them in their educational programs.** Most members of the target population for adult literacy programs do not suffer from a fear of computers. Researchers report that even before they have experience with computers, non- or low-literate adults tend to have favorable attitudes toward them.

- **CAI effectiveness is limited by the shortage of appropriate software.** Although the availability of software that can be used in adult literacy instruction is increasing rapidly, there is still a great deal to be done in this area. However, one source (Patton 1987) suggests that the "potential appears to be enormous" (p. 91).

- **CAI has not been effective with all learners.** Although CAI is effective with a significant number of adult learners, it should not be viewed as a panacea. There are some adults who have reported that they do not like working with computers.

Guidelines for Effective Use of Computer-assisted Instruction

The following guidelines for effective use of CAI in adult literacy programs are derived from the research findings discussed above as well as practices cited in the literature.

1. **Familiarize all instructional staff, whether paid or volunteer, with the CAI aspects of the literacy program.** Individuals who have been responsible for tutor-based instruction cannot help their students make the transition to CAI unless they are knowledgeable about it.

2. **Provide sufficient demonstration time and enough individual personal assistance for students to feel comfortable using computers.** Lewis (1988) suggests that the computer needs to be demystified and that instructors can help in this process by relaying some of their personal experiences in learning to use computers. Also, to ensure that students do not lose confidence in their ability to operate computers, sufficient personal assistance must be available, especially when computers are being introduced.

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3. **Provide training and inservice opportunities for instructional staff.** Since instructor commitment and expertise are key components in the success of CAI, staff need initial training as well as continual updating. Equipment and software change rapidly so staff members should be provided adequate resources to keep up with the latest developments.

4. **Use only software that is appropriate for adult learners.** Adults will be "turned off" unless the content of the software is suitable for them. Although there is still a dearth of appropriate material, a number of projects have been funded to develop lists of software that is appropriate for use in adult literacy instruction. Some of these projects also developed guidelines that can be used in selecting software. (See Pierce, Blackwell, and Harper 1985; *Software Buyer's Guide. 3rd Edition* 1986; *Software Evaluation* 1987; and Williams 1986 for some examples of software lists and selection guidelines.)

5. **Do not think of the computer only as a tool for individual use.** Although individualization is one of the positive characteristics of CAI, computers can also be used by pairs or groups of students. For example, more advanced students can help beginners learn how to operate the computer. Peer tutoring, group assignments, and group problem solving can also be a part of CAI. Some students may be able to overcome negative feelings about the computer if they work in groups.

6. **Provide for flexible scheduling of microcomputer use.** Since one of the primary advantages of CAI is flexibility, the machines need to be available for use during hours that fit adult schedules. That may mean opening the instructional site early in the day, leaving it open in the evening, and providing weekend hours.

7. **Do not depend on the computer to be the sole source of instructional support.** Most adults engaged in literacy education need the support, assistance, and reassurance that only a human can provide. The research reveals that computers are most effective when used appropriately by skilled teachers.

8. **Provide opportunities for students to develop occupational skills through CAI.** For example, students can learn and use work processing as a part of developing writing skills. Word processing is a skill that can be applied in many job situations.

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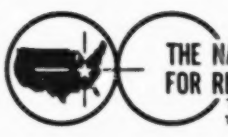

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